AMENDMENTS TO THE CLAIMS

LISTING OF CLAIMS:

1. (Currently Amended) A device comprising:

an electroosmotic pump;

a particle separating channel having a first end and a second end, the particle separating channel at the first end being in communication with the electroosmotic pump;

a first electrode disposed proximate the first end the particle separating channel; ~~and~~

at least one second electrode spaced apart the first electrode to maintain a first voltage;

a first pump channel connected to a first pump reservoir;

a second pump channel connected to a second pump reservoir, the first and second pump channels in communication with the first end of the particle separating channel;

a first pump electrode positioned in the first pump reservoir; and

a second pump electrode positioned in the second pump reservoir, wherein a voltage drop between the first and second pump electrodes causes electroosmotic flow in the first and second pump channels and convective flow in the particle separation channel; and

further comprising a sidearm with a pair of sidearm channel electrodes, the sidearm extending from and communicating with the first channel, wherein the sidearm is adapted to focus molecules into the sidearm by being of a shape selected from the group consisting of semi-circular, oblique parabolic segmental, sawtooth, and combinations thereof.

2. (Original) The device of claim 1, wherein the first electrode is part of the electroosmotic pump.

3. (Original) The device of claim 1, further comprising a reservoir at the second end of the particle separating channel.

4. (Cancelled)

5. (Original) The device of claim 1, further comprising at least one sidearm channel in communication with the particle separating channel.

6. (Original) The device of claim 5, wherein at least one second electrode is proximate each sidearm channel to maintain a voltage with the first electrode.

7. (Original) The device of claim 6, wherein the first and second electrodes are adapted to enable a voltage gradient to be applied to a solution when the solution is disposed in the particle separating channel, the voltage gradient to cause charged particles within the solution to migrate in the first particle separating channel.

8. (Original) The device of claim 1, further comprising a third electrode disposed in the sidearm channel spaced apart from the at least one second electrode to maintain a second voltage, the second voltage to cause charged particles in a solution to migrate in the sidearm channel.

9. (Original) The device of claim 5, further comprising sieving media disposed in the sidearm channel.

10. (Original) The device of claim 5, further comprising a reservoir at the second end of the particle separating channel and a reservoir disposed on the end of the at least one sidearm channel distal to the particle separating channel.

11. (Currently Amended) A method comprising:

providing an electroosmotic pump;

forming a particle separating channel having a first end and a second end;

connecting the first end of the particle separating channel in communication with the electroosmotic pump;

disposing a first electrode proximate the first end the particle separating channel;

disposing at least one second electrode spaced apart the first electrode; ~~and~~

maintaining a first voltage between the first and second electrodes;

a first pump channel connected to a first pump reservoir;

a second pump channel connected to a second pump reservoir, the first and second pump channels in communication with the first end of the particle separating channel;

a first pump electrode positioned in the first pump reservoir; and

a second pump electrode positioned in the second pump reservoir, wherein a voltage drop between the first and second pump electrodes causes electroosmotic flow in the first and second pump channels and convective flow in the particle separation channel; and

focusing molecules into a sidearm with a pair of sidearm channel electrodes, the sidearm extending from and communicating with the first channel.

12. (Cancelled)

13. (Original) The method of claim 11 further comprising coupling a reservoir to the second end of the particle separating channel.

14. (Original) The method of claim 11, further comprising forming at least one sidearm channel and connecting the at least one sidearm channel with the particle separating channel.

15. (Original) The method of claim 14, further comprising disposing at lease one second electrode proximate the at least one sidearm channel to maintain a voltage with the first electrode.

16. (Original) The method of claim 15, further comprising disposing a third electrode in the sidearm channel spaced apart from the at least one second electrode to maintain a second voltage, the second voltage to enable an electric field to be applied to a solution disposed in the sidearm channel.

17. (Original) The method of claim 14, further comprising disposing sieving media in the at least one sidearm channel.

18. (Original) The method of claim 17, further comprising disposing a conductivity detector in the sidearm channels.

19. (Original) A system comprising:

a particle separating channel having a first end and a second end;

at least one sidearm channel in communication with the particle separating channel;

a first electrode disposed proximate the first end the particle separating channel;

at least one second electrode spaced apart the first electrode to enable a voltage gradient to be applied to a solution when the solution is disposed in the particle separating channel, the at least one of the second electrodes disposed proximate the at least one sidearm channel; and

an electroosmotic pump in communication with the particle separating channel at the first end, the electroosmotic pump creating convective flow in the particle separating channel to move the solution against the voltage gradient.

20. (Original) The system of claim 19, further comprising a third electrode disposed in the sidearm channel spaced apart the second electrode to maintain a second voltage to enable an electric field to be applied to a solution disposed in the sidearm channel.

21. (Original) The system of claim 20, wherein the system is a micro-electro-mechanical system and the particle separating channel and the at least one sidearm channel are microfluidic channels.

22. (Original) A method comprising:

applying a voltage drop between electrodes in an electroosmotic pump to create convective flow of a solution in a particle separation channel in communication therewith formed in a device;

applying an electric field gradient in the particle separation channel to the solution containing charged particles under conditions that will cause at least some of the charged particles to focus the particle separation channel; and

without transfer, applying an electric field to the focused charged particles to cause the focused charged particles to migrate through a sieve disposed in at least one sidearm channel in the device, the at least one sidearm channel transverse to the first channel and in communication therewith.

23. (Original) The method of claim 22, wherein applying the electric field gradient to the solution containing charged particles under conditions that will cause at least some of the charged particles to focus in the particle separation channel includes causing at least some of the charged particles to focus at or near the at least one sidearm channel.

24. (Original) The method of claim 22, wherein applying an electric field gradient includes applying a linear electric field gradient.

25. (Original) The method of claim 22, further comprising detecting the charged particles in the at least one sidearm channel.